GROUP A: PROJECT MANAGEMENT

A.1 Title and Approval Sheet

Quality Assurance Project Plan
For
Mora Watershed Based Plan Wolf Creek Update, Grant No. 667-429-1B

Submitted by:
New Mexico Environment Department
Surface Water Quality Bureau

APPROVAL SIGNATURES

Davena Crosley Digitally signed by Davena Crosley Date: 2020.07.27 12:03:28 -06'00'

Abe Franklin
Program Manager, SWQB Watershed Protection Section — Date

Wendy Pierard Digitally signed by Wendy Pierard Date: 2020.07.27 09:25:01 -06'00'

Wendy Melgin-Pierard
Project Officer, SWQB Watershed Protection Section — Date

Miguel Montoya Digitally signed by Miguel Montoya Date: 2020.07.27 09:32:10 -06'00'

Miguel Montoya
Quality Assurance Officer, SWQB Standards, Planning and Reporting Team — Date

LESLIE RAUSCHER Digitally signed by LESLIE RAUSCHER DN: c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=LESLIE RAUSCHER, 0.9.2342.19200300.100.1.1=68001003655681 Date: 2020.08.25 10:53:39 -05'00'

Leslie Rauscher
Environmental Protection Specialist Project Officer, WQPD, EPA Region 6 — Date

NELLY SMITH Digitally signed by NELLY SMITH DN: c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=NELLY SMITH, 0.9.2342.19200300.100.1.1=68001003655673 Date: 2020.08.27 12:06:04 -05'00'

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Chief, State and Tribal Programs Section, WQPD, EPA Region 6 — Date

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A.2 Table of Contents

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ACRONYMS

AU	Assessment Unit
BEHI	Bank Erodibility Hazard Index
DQO	Data Quality Objective
DQI	Data Quality Indicators
EPA	United States Environmental Protection Agency
HPWA	Hermit's Peak Watershed Alliance
NMED	New Mexico Environment Department
NMRAM	New Mexico Rapid Assessment Method
QAPP	Quality Assurance Project Plan
QA	Quality Assurance
QAO	Quality Assurance Officer
SOP	Standard Operating Procedures
SWQB	SWQB Surface Water Quality Bureau
TBD	To Be Determined
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
WBP	Watershed Based Plan
WQPD	Water Quality Protection Division

A.3 Distribution List

Table 1. below contains the distribution list, project roles and responsibilities for this project. The QA Officer will ensure that copies of this QAPP and any subsequent revisions are distributed to members who have signature authority to approve this QAPP. The SWQB Project Officer will ensure that copies of the approved QAPP and any subsequent revisions are distributed to all other project personnel listed in Table 1. All members of the distribution list who do not have signature authority to approve this QAPP will review the QAPP and sign the Acknowledgment Statement prior to initiating any work for this project. The signed Acknowledgement Statements will be collected by the SWQB Project Officer and will be given to the QA Officer for filing with the original approved QAPP.

Table 1. Distribution List, Project Roles, and Responsibilities

Name	Organization	Title/Role	Responsibility	Contact Information
Abe Franklin	SWQB	WPS Program Manager	Reviewing and approving QAPP, managing project personnel and resources	(505) 827-2793 abraham.franklin@state.nm.us
Miguel Montoya	SWQB	QA Officer	Reviewing and approving QAPP, QA audits as needed to assure adherence to the approved QAPP.	(505) 476-3794 miguel.montoya@state.nm.us
Wendy Melgin-Pierard	SWQB	Project Officer	Manage progress of project, preparing QAPP, project reporting, coordinating with contractors, maintains project files, prepares final project report etc., data collection, and training.	(505) 476-3026 wendy.pierard@state.nm.us
Lea Knutson, ED	Hermit's Peak Watershed Alliance	Project Manager	Project oversight, data management, and review quarterly reports, project verification and validation of field data.	505-425-5514 lknutson@hermitspeakwatersheds.org
Amina Sena	Hermit's Peak Watershed Alliance	Project Coordinator	Project design and implementation, construction oversight, write up quarterly reports, project verification and validation of field data.	(505) 718-6802 asena@hermitspeakwatersheds.org
Amina Sena	Hermit's Peak Watershed Alliance	Field Team Supervisor / member	Field monitoring, data collection, record keeping, and submitting reports	(435) 669-4052 asena@hermitspeakwatersheds.org
Rich Pratt	Hermit's Peak Watershed Alliance	Field Team member	Field monitoring, and data collection.	(505) 718-6802 rpratt@hermitspeakwatersheds.org

Leslie Rauscher	EPA	Environmental Protection Specialist WQPD, Reg 6	Reviewing and approving QAPP	(214) 665-2773 rauscher.leslie@epa.gov
Nelly Smith	EPA	Chief, State and Tribal Programs Section WQPD, Reg 6	Reviewing and approving QAPP	(214) 665- 7109 smith.nelly@epa.gov

A.4 Project Organization

The SWQB Quality Management Plan (NMED/SWQB 2019) documents the independence of the Quality Assurance Officer (QAO) from this project. The QAO is responsible for maintaining the official approved QAPP. Figure 1 presents the organizational structure for the Mora Watershed Based Plan Wolf Creek Update.

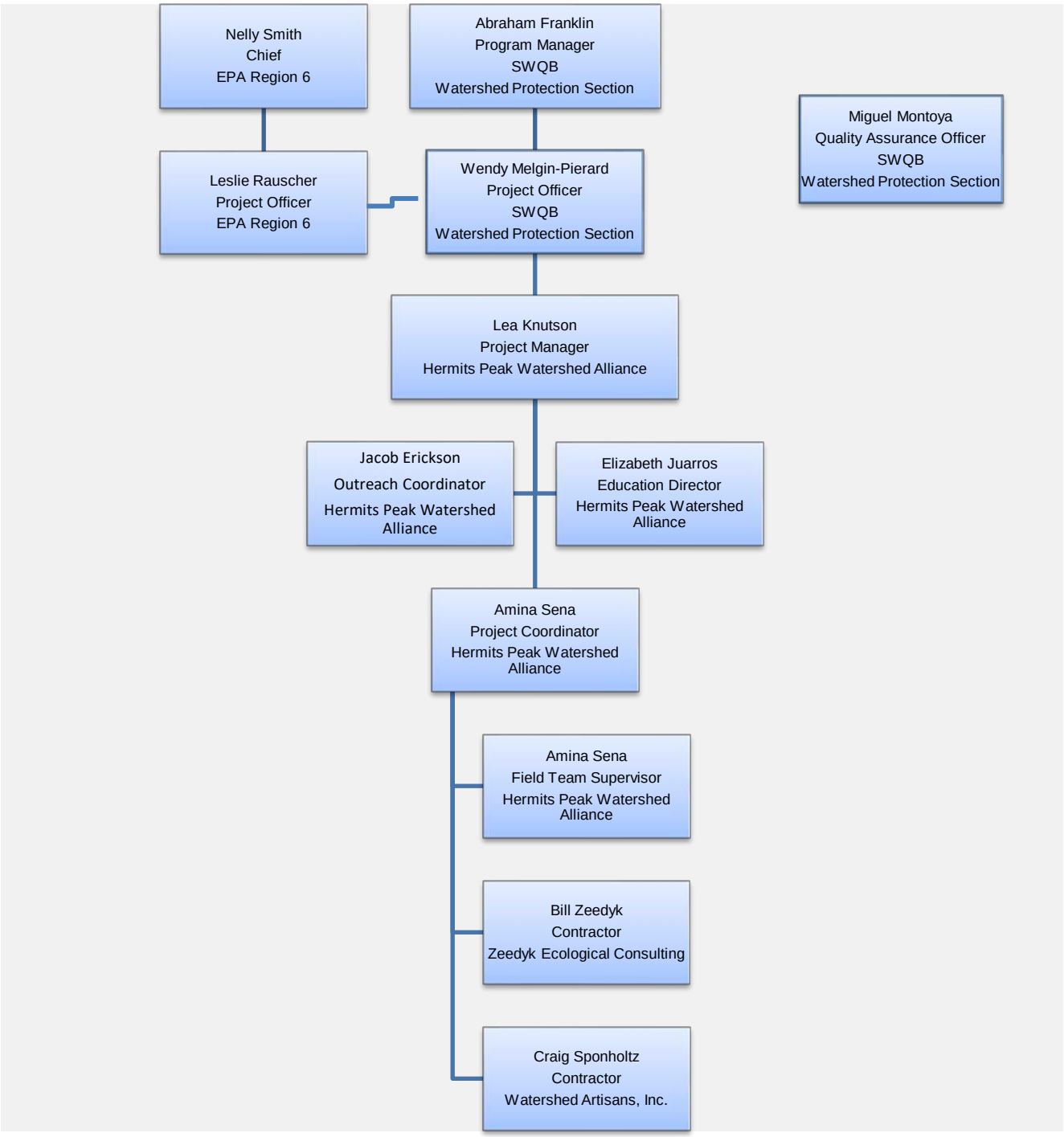


Figure 1. Organization Chart

A.5 Problem Definition/Background

This QAPP refers to the project as the Mora Watershed Based Plan Wolf Creek Update, and more generally the Wolf Creek Watershed Plan or "WCWP". WCWP is being managed by the Hermit's Peak Watershed Alliance (HPWA). The purpose of this Quality Assurance Project Plan (QAPP) is to ensure valid and defensible data is used in the development of the WCWP. This QAPP will speak to data collection, data compilation, watershed modeling and analysis of hydrologic trends in Wolf Creek to help identify Potential Sources of Flow Regime Modification as well as help inform recommendations for future Management and Restoration Measures needed.

According to the 2018 - 2020 State of New Mexico Clean Water Act §303(d)/§305(b) Integrated Report and Appendix A (Integrated Report), Wolf Creek does not support its designated use for Marginal Coldwater Aquatic Life with a cause of impairment listed as Flow Regime Modification (NMED SWQB 2018). A TMDL has not been developed because its impairment is not caused by a pollutant but rather low flow. This type of designation on the Integrated Report is referred to as a IR Category 4C, defined as "impaired for one or more designated uses, but does not require development of a TMDL because impairment is not caused by a pollutant" (NMED SWQB 2018). Unlike a water quality pollutant issue where a load reduction is needed, in this case a hydrologic study is needed instead.

This hydrologic study will be used to develop the WCWP to better understand the potential flow regime of Wolf Creek and help identify sources of flow modification. Flow monitoring results will be assessed to determine if further investigation is warranted for the development of a Use Attainability Analysis (UAA). The UAA nor the additional data (i.e., Hydrology Protocol) required are covered by this QAPP. The WCWP will include Management and Restoration Measures needed to address low flow conditions and identify sources causing the flow regime modification.

Background

The temporal and spatial dynamics of streamflow presence and absence is considered vital information to many hydrological and ecological studies (Kaplan, 2019). Wolf Creek was first listed as Not Supporting because of Low Flow Alterations in the 2010 - 2012 State of New Mexico Clean Water Act 303(d)/§305(b) Integrated Report. Despite being considered a Perennial Stream, the Integrated Report Appendix A notes, "According to the manager of the Black Willow Ranch, Wolf Cr. used to be perennial, but then the well serving the facility at Valmora was deepened or otherwise improved and pumping has increased. Now Wolf Cr. goes dry (AU Comment)." Current and historical flow data will be examined to evaluate surface and groundwater flow trends and inform on potential flow regime for Wolf Creek.

HPWA developed a Watershed Based Plan for the Mora River – Upper Canadian Plateau (MRWBP); this plan was approved by NMED and USEPA in August 2016. While the MRWBP included the Wolf Creek sub-watershed, the focus of that plan was on the main stem of the Mora River whereas Wolf Creek was only addressed indirectly. The large size of the Mora watershed (477 square miles) made a detailed analysis of the low flow issues in Wolf Creek difficult. Furthermore, the lack of any surface flow in Wolf Creek at the time of the plan made flow studies challenging.

According to the Assessment Rationale Record of Decision (NMED 2018), Wolf Creek (Mora River to headwaters) was dry when visited by NMED during the 2015-2016 Canadian/Dry Cimarron survey. The MRWBP does offer considerable information relevant to the development of a Mora Watershed Based Plan Wolf Creek Update (WCWP). Another source of information that will be drawn upon for this WCWP is a restoration report developed for one-third of the Fort Union Ranch which includes a large part of

Wolf Creek, by Bill Zeedyk during the current On-the-Ground Improvement Projects for the Mora River – Upper Canadian Plateau Phase IA.

Objective/ Goal

The goal of this project is to write a WCWP with stakeholder involvement for the Wolf Creek watershed in Mora County, New Mexico. The development of the WCWP will fill information gaps related to groundwater and surface water flow in Wolf Creek to better understand the current flow regime. The WCWP will clearly identify sources of the Flow Regime Modification and identify Management and Restoration Measures to aid in restoring perennial flow to Wolf Creek or improving base flows where the potential exists.

The objectives of this project include a better understanding of the Wolf Creek Watershed and the hydrology of its main tributaries. The WCWP will help inform stakeholders as to what the potential flow regime is for Wolf Creek using data based on modeling scenarios in conjunction with on the ground monitoring. This information can then be used to better understand why Wolf Creek is not supporting the designated use of Marginal Coldwater Aquatic Life. Potential Sources of Flow Regime Modification will be identified in the WCWP as well as recommendations for Management and Restoration Measures needed to address watershed and surface flow concerns. With a better scientific understanding of the current impacts to surface flow as well as impacts to watershed condition and recharge, it is then possible to prioritize future restoration efforts to improve surface flow in Wolf Creek.

Project/Task Description

Description

The purpose of the Project is to develop a Watershed Based Plan with stakeholder involvement for the Wolf Creek watershed in Mora County, New Mexico. The State of New Mexico has found Wolf Creek to not support its designated Marginal Coldwater Aquatic Life use because of flow regime modification. The watershed plan will include five planning elements identified by the U.S. Environmental Protection Agency to characterize and identify solutions to Flow Regime Modification. The monitoring will be completed under this Quality Assurance Project Plan (QAPP) which will be written and submitted to EPA prior to data collection.

This Wolf Creek update will fill information gaps related to groundwater and surface water flow in Wolf Creek, clearly identify sources of the Flow Regime Modification and identify Management and Restoration Measures in the attempt to aid in restoring perennial flow to Wolf Creek or improving base flows where the potential exists. This will be elaborated in more detail in Data Generation and Acquisition section B1.

HPWA will develop an alternative plan (explained in New Mexico Nonpoint Source Management Plan. 2019) instead of a Watershed-Based Plan because the alternative plan more appropriately addresses Category 4C streams. To address the first of five elements in an alternative plan HPWA will examine all conditions that have led to reduced flow, and hence will identify the sources of Wolf Creek flow impairment with the goal of restoring perennial flow to Wolf Creek or improving base flows where the potential exists.

Identify Sources of Flow Impairment

Based on past work in the area, it is suspected that the WCWP may provide information to suggest a need to reclassify the upper stream reach of Wolf Creek as it is generally considered to be ephemeral with perennial pools. The data collected under this QAPP may be used to provide information to support the development of a more rigorous Use Attainability Analysis, although a UAA is not part of this effort.

Initial identification of erosive arroyos draining alluvial fans, old remnants of the Santa Fe trail and other old roads concentrating surface flows, constructed impoundments and berms, a lack of flood plain connectivity because of historic incision, a loss of instream wetlands, a major flow diversion to Wheeler Lake and deep wells in the area are among the many potential contributors of a flow impairment.

To investigate these potential sources HPWA will engage stakeholders and host educational events to engage locals in the discussion. The Social Condition Report (appendix A) will be a process in which HPWA will interview key stakeholders and agency collaborators, and through this process have a better understanding of current flow modifications and the history and uses supported by these diversions.

The Stream Restoration Potential Assessment (field reconnaissance) will also be a source of information to identify flow modifications and will be more of a boots on the ground effort to identify in the watershed plan, potential projects for future active restoration. This assessment will help determine needs for Management and Restoration Measures and identify specific projects, their locations and help prioritize how effective and practical projects might be towards the goal of improving flow in Wolf Creek.

HPWA will utilize satellite imagery and LiDAR (Light Detection and Ranging) to locate wet and dry stream reaches and identify visible on-the-ground flow modifications to surface flow.

HPWA will identify sources of flow modification using the monitoring approach outlined. We will use this baseline flow data, assemble historical information, and work together with NMED to develop attainable flow goals relating flow regime to the beneficial uses that can be realistically supported. The watershed plan will be a dynamic document that can track long-term progress toward restoring flow to this and other similar 4C streams in New Mexico. HPWA will then conduct literature research to combine with all on the ground gathered information to determine effective Management and Restoration Measures to improve flow conditions, advise on the true potential flow regime of Wolf Creek, and to model how Management and Restoration Measures are expected to help improve flow in Wolf Creek.

Surface Stream Observations

There is no USGS gage located on Wolf Creek to monitor stream flow. Surface flow conditions will be monitored with various techniques including by hand with a flow velocity flow meter, and with motion sensitive cameras and HOBO® MX TidbiT in more remote areas and to improve overall project efficiency. HOBO® MX TidbiT data loggers will be deployed over a longer time span to capture flow information as well as temperature information during the season directed in the appropriate SWQB SOP.

Motion sensitive cameras will use time lapse monitoring and will be set with an internal software with a temporal resolution of 15 minutes. Cameras will be mounted at trees or structures close to the channel. For improved image analysis a gauging plate will be installed in the channel. This method was closely related to a time-lapse camera gauging system published by Gilmore et al. (2013).

HPWA will utilize satellite imagery and LiDAR (Light Detection and Ranging) to locate wet and dry sections, arroyos draining alluvial fans, wetlands, and identify visible on-the-ground flow modifications to surface flow. This Wet Dry Mapping will help guide future restoration efforts and will be critical in understanding the current flow regime of Wolf Creek.

Sonde Deployment (YSI 6920 VS) water quality data (pH, conductivity, turbidity, dissolved oxygen, temperature) will also be collected at Flow Monitoring locations with a YSI-6 series sonde to help describe overall water quality and detect any water quality concerns that could be related to flow.

Subsurface water level and flow observation
Shallow groundwater is the main thing keeping Wolf Creek saturated currently, accordingly to local regional expert PhD. Kate Ziegler, who is involved actively is groundwater mapping efforts in this area as part of the Mora Wagonmound Conservation District. It is critical to have a better understanding of subsurface hydrology and how shallow alluvium storage; shallow unconfined groundwater supplies and deep ancient aquifers are interacting with surface flows and water quantify issues in Wolf Creek. Surface runoff from large tributaries and sallow groundwater is all part of the water budget for Wolf Creek.

- Subsurface water monitoring
    - Install and monitor shallow groundwater wells and utilize pressure transducers and temperature loggers to monitor water presence and temperature profiles.
    - Subsurface moisture will be sampled with HOBO® MX TidbiT dataloggers which indicates presence or absence of moisture and temperature in the streambed.
    - Groundwater information from existing wells utilizing pressure transducers and temperature loggers to monitor water presence and temperature profiles.
    - Groundwater information from other key agencies and information gathered by the Mora Wagonmound Conservation District effort.
    - Gather spring flow information for Higgins Canyons Spring, Black Mesa Spring Marshall House Spring, and any others located within the watershed.

Watershed Modeling- Data derived from surface and subsurface monitoring will be evaluated using SWAT-MODFLOW watershed model (https://swat.tamu.edu/software/swat-modflow/). Interaction between groundwater and surface water in watersheds has significant impacts on water management and water rights, nutrient loading from aquifers to streams, and in-stream flow requirements for aquatic species and of particular importance are the spatial patterns of these interactions (Bailey, R.T. et al, 2016). For Wolf Creek, SWAT MODFLOW is a great watershed-based model that can, at a sub-basin scale, predict how restoration measures and changes in management impact water quantity and quality.

This watershed-based model is especially helpful because it incorporates subsurface and regional geology information that specifically makes this model more robust when it comes to predicting low flow conditions. Wolf Creek and the flow regime here in the semi-arid southwest, makes it critical to use watershed models that are regional calibrated to our specific geology and subsurface alluvial storage, so that results from the model can accurately help us determine the correct low flow conditions which are critical when trying to determine the potential flow regime.

Photographic documentation will be collected using the protocols identified in Let the Water Do the Work (Zeedyk, et al, 2009). Photographic documentation showing increased wetted perimeter on Wolf Creek and locating current wetland vegetation and how it changes over time. Long term photo

monitoring efforts will focus on the areas where active restoration efforts have been implemented. The list of photo points is located as shown in Table 2 below. HPWA will also complete the photograph field log to document photographs at all WCWP monitoring locations.

Table 2. Long term restoration monitoring point locations.

Row Labels	X Value	Y Value
NAWCA10ORD	**35.889399**	**105.012388**
NAWCA13ORD	**35.889545**	**105.012116**
NAWCA1ORD	**35.896651**	**105.016416**
NAWCA4Baffle	**35.887804**	**105.011214**
NAWCA4ORD	**35.893773**	**105.015203**
NAWCA6AORD	**35.893244**	**105.015183**
NAWCA8Baffle	**35.884208**	**105.009613**
NAWCA9Baffle	**35.88369**	**105.009369**

Schedule
Planned project start date is the first of January 2020 with a planned project end date of December 31st, 2022.

Table 3. Project tasks, products, responsible party, and timeline for WCWP

Task	Product	Responsible Party	Approximate Start Date	Approximate Completion Date
Project Management and Administration	Procurement for contract, Contracts with subcontractors, Quarterly reports, Invoices with match reports, Final Report, Notice of Completion	Lea Knutson, HPWA	Jan. 2020	Dec. 31, 2022
Quality Assurance Project Plan	Approved QAPP	Amina Sena, HPWA	May 2020	July 2020
Engage Stakeholders and Community Education	List and evaluate stakeholder and host educational events to engage locals. Hold a public meeting to review the WP draft and incorporate public input.	Elizabeth Juarros, HPWA	July 2021	June 2022
Social Condition Report	Assess Social Condition – interview key stakeholders and agency collaborators	Amina Sena, HPWA	June 2020	June 2021

Stream Restoration Potential Assessment	Conduct an assessment that assists HPWA with identifying the types of restoration projects, their locations and priorities that will be effective and practical in improving flow conditions in Wolf Creek.	Craig Sponholtz, Watershed Artisans, Inc.	Jan. 2021	June 2021
Wet Dry Mapping and Flow Modification Assessment	Utilize satellite imagery and LiDAR (Light Detection and Ranging) to locate wet and dry sections, arroyos draining alluvial fans, wetlands, and identify visible on-the-ground flow modifications.	Amina Sena, HPWA	July 2020	January 2021
Sonde Data Collection	Stream temperature, turbidity, pH, DO, and specific conductivity	Amina Sena, HPWA	Summer, 2020	Sept. 2022
Surface Flow and surface moisture presence Monitoring	Surface flow will be collected at all monitoring sites using: Measurable flow using a Velocity Meter at sites with commonly observed observable flows and with motion sensitive cameras and HOBO® MX TidbiT dataloggers to indicate presence or absence of water at dryer sites.	Amina Sena, HPWA	Summer, 2020	Sept. 2022
Subsurface Flow Monitoring	Shallow subsurface groundwater information will be gathered from existing wells in the local vicinity to help understand the history of well pumping and surface flows in Wolf Creek. To help understand where subsurface water occurs, shallow wells with dataloggers will be used to map presence of moisture.	Amina Sena, HPWA	Summer, 2020	Sept. 2022
Prepare a Draft and Final Watershed Plan.	EPA Approved Wolf Cr. Update WBP, distributed plan to stakeholders and posted on HPWA website	Lea Knutson, Amina Sena HPWA	January 2022	Dec. 31, 2022
Reporting to SWQB Project Officer	Regular Reports	Lea Knutson, Amina Sena HPWA	Jan. 2020	Dec. 31, 2022

Reporting to EPA	Quarterly and Final Report to EPA	Wendy Melgin-Pierard, NMED	Jan. 2020	Dec. 31, 2022

Project Area

This project is in Mora County, New Mexico. The NMED Assessment Unit is Wolf Creek (Mora River to headwaters) NM-2305.3.A_10. To inform the WCWP, local hydrology will be monitored and assessed to collect data which helps to identify sources of flow regime modification for the current stream impairment. This data will drive goals and strategies to improve water flow within the Wolf Creek Watershed (USGS HUCs 110800040401, 110800040402, and 110800040403). The Project Area is a total of 77,500 acres of 121 square miles.

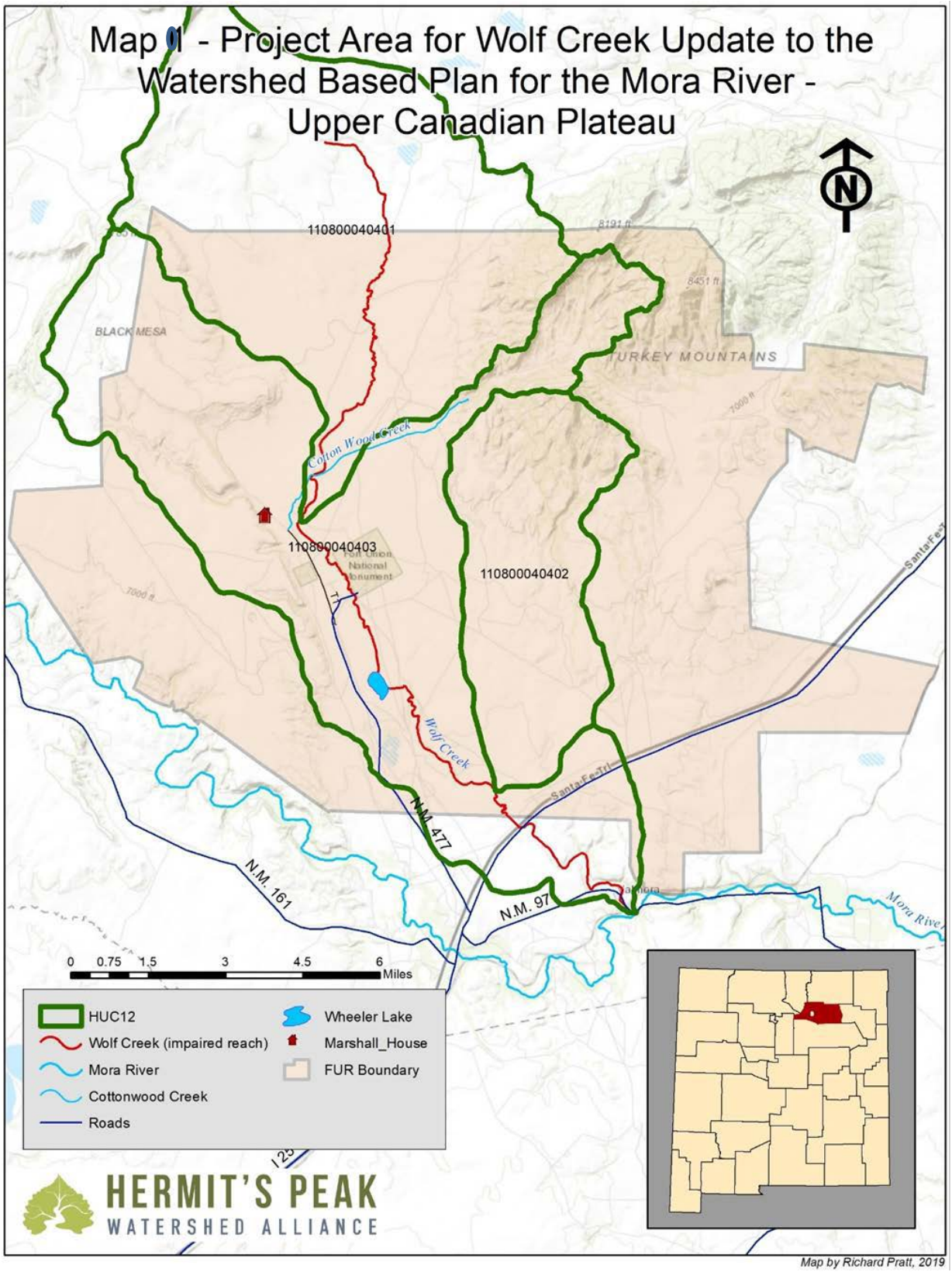


Figure 2. Project Area Map

Monitoring Location Selection Criteria

To investigate potential sources for the Flow Regime Modification, monitoring of surface and subsurface water conditions will occur at strategic locations. A monitoring design was based on experience in the area with a long history of collaborative restoration projects as well as a Google Earth aerial exercise to fine tune monitoring locations.

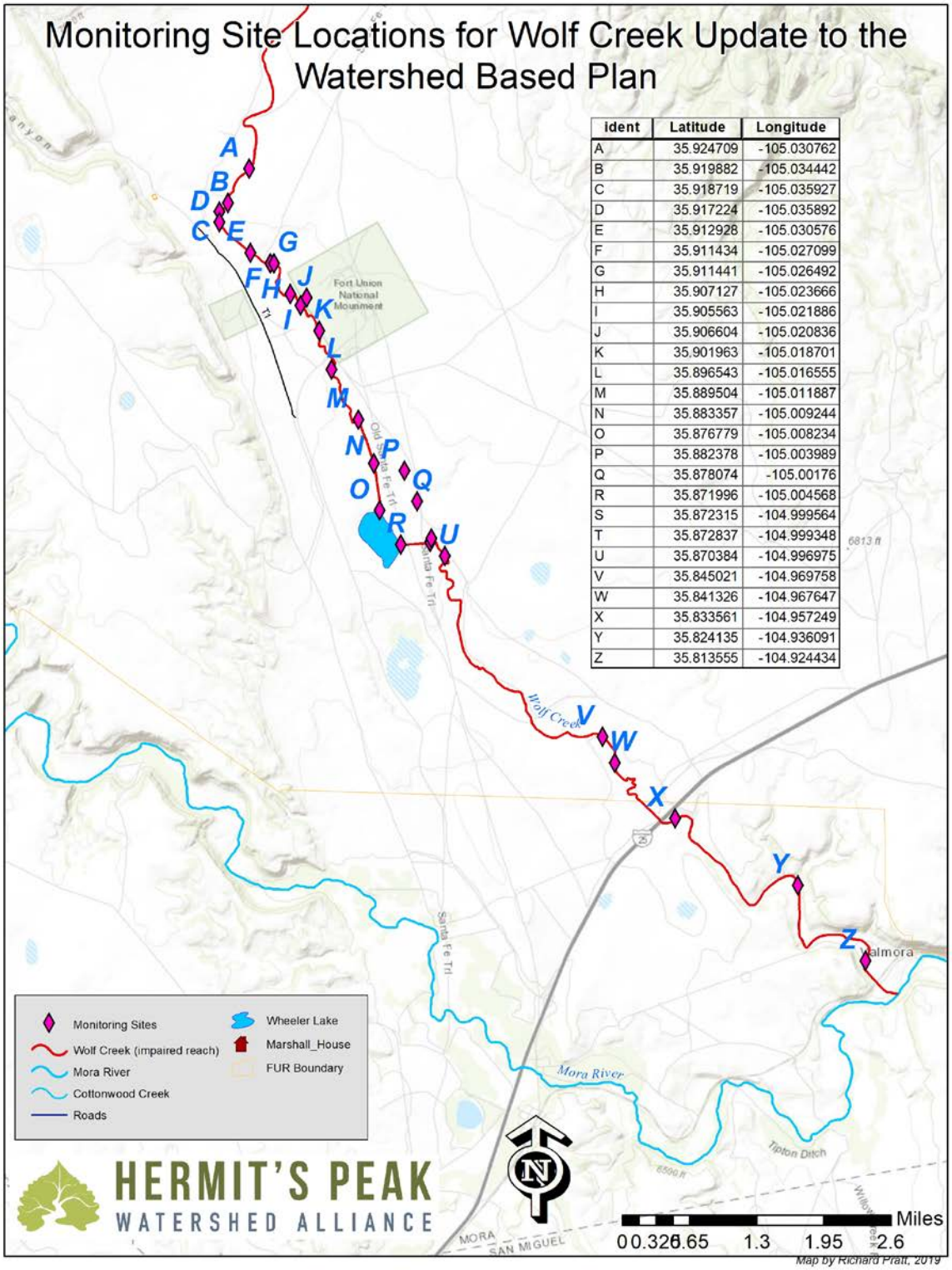
Figure 3 is a representation of all monitoring locations for this project. Monitoring location were determined through various techniques as stated above. The Hydrology Protocol was used to help guide design location selection (SWQB, 2011). Specific elements of the Hydrology Protocol considered while determining the monitoring locations include the following:

- Level 1 Evaluation data collection procedures were reviewed from the Hydrology Protocol and incorporated so that HPWA collects the appropriate GIS coverages.
- The Stream Segment identification and Sample Reach Selection process from the Hydrology Protocol was applied to monitoring point selection. Specifically, flow of major tributaries was considered as well as changes in geology, land use, slope, riparian vegetative communities as well as documenting the diversions and return flows. Each of these specific elements were included from the Level section of the Hydrology Protocol.

Monitoring design incorporated flow inputs from major tributaries and large watershed areas. Wheeler Lake and the large diversion structure that reroutes the entire main tributary of Wolf Creek into Wheeler Lake is a main focal point for monitoring activities. Monitoring locations were also located given changes in geologic substrate in the Wolf Creek stream bottom as well as on the ground knowledge on where more reliable surface flows regularly occur. Monitoring locations all occur on the main tributary of Wolf Creek, Assessment Unit NM-2305.3.A_10. Large tributaries may also have HOBO® MX TidbiT meters to detect presence and absence of flow, but all flow monitoring sites, shallow wells and motion sensor cameras are in the main Wolf Creek channel. Topographical accessibility issues and landowner accessibility was also considered.

Monitoring locations were selected specifically to identify where the perennial flow of Wolf Creek begins, where main sources of flow modification exist, in particular, the Wheeler Lake stream diversion built in the 1940s. The data will help us identify the potential hydrologic flow regime as well as focus in on sources and causes for the Flow Regime Modification. This information is critical for the main purpose and need to help identify Potential Sources of Flow Regime Modification as well as help inform recommendations for future Management and Restoration Measures needed.

When changes affect the scope, implementation, or assessment of the outcome, this QAPP will be revised to keep project information current. The SWQB Project Officer, with the assistance of the QAO, will determine the impact of any changes on the technical and quality objectives of the project. This Project Plan will be reviewed annually by the SWQB Project Officer to determine the need for revision.



Ident	Latitude	Longitude
A	35.924709	-105.030762
B	35.919882	-105.034442
C	35.918719	-105.035927
D	35.917224	-105.035892
E	35.912928	-105.030576
F	35.911434	-105.027099
G	35.911441	-105.026492
H	35.907127	-105.023666
I	35.905563	-105.021886
J	35.906604	-105.020836
K	35.901963	-105.018701
L	35.896543	-105.016555
M	35.889504	-105.011887
N	35.883357	-105.009244
O	35.876779	-105.008234
P	35.882378	-105.003989
Q	35.878074	-105.00176
R	35.871996	-105.004568
S	35.872315	-104.999564
T	35.872837	-104.999348
U	35.870384	-104.996975
V	35.845021	-104.969758
W	35.841326	-104.967647
X	35.833561	-104.957249
Y	35.824135	-104.936091
Z	35.813555	-104.924434

Figure 3. Project Area Monitoring Locations

Table 4. Waterbody Attributes for the Project

Monitoring Station ID	Motion Sensitive Camera	HOBO® TidbiT	Shallow Well	Flow Monitoring Sonde / Photos	Assessment Unit ID	Latitude	Longitude
A	X	-	X	X	NM-2305.3.A_10	35.92470876	-105.0307622
B	X	-	X	X	NM-2305.3.A_10	35.91988249	-105.0344421
C	X	-	X	X	NM-2305.3.A_10	35.91871928	-105.035927
D	X	-	X	X	NM-2305.3.A_10	35.91722441	-105.0358921
E	X	X	X	-	NM-2305.3.A_10	35.91292751	-105.0305756
F	-	X	X	-	NM-2305.3.A_10	35.91143367	-105.0270991
G	X	X	-	-	NM-2305.3.A_10	35.91144083	-105.0264916
H	-	X	-	-	NM-2305.3.A_10	35.90712707	-105.0236661
I	X	-	-	X	NM-2305.3.A_10	35.90556289	-105.0218865
J	-	X	-	-	NM-2305.3.A_10	35.90660362	-105.0208358
K	-	X	-	-	NM-2305.3.A_10	35.90196316	-105.0187013
L	-	X	X	X	NM-2305.3.A_10	35.89654278	-105.0165548
M	X	-	-	-	NM-2305.3.A_10	35.88950392	-105.0118872
N	-	X	X	X	NM-2305.3.A_10	35.88335704	-105.0092437
O	-	-	X	X	NM-2305.3.A_10	35.87677858	-105.008234

P	-	X	-	-	NM-2305.3.A_10	35.88237831	-105.0039894
Q	-	-	X	X	NM-2305.3.A_10	35.87807378	-105.0017597
R	-	X	-	-	NM-2305.3.A_10	35.87199625	-105.0045678
S	-	X	-	-	NM-2305.3.A_10	35.87231502	-104.9995643
T	-	X	-	-	NM-2305.3.A_10	35.87283699	-104.9993483
U	-	X	X	-	NM-2305.3.A_10	35.87038389	-104.9969751
V	X	X	-	-	NM-2305.3.A_10	35.84502123	-104.9697579
W	X	-	X	X	NM-2305.3.A_10	35.84132605	-104.9676473
X	-	X	-	-	NM-2305.3.A_10	35.83356109	-104.9572487
Y	-	X	X	X	NM-2305.3.A_10	35.82413531	-104.936091
Z	X	X	-	X	NM-2305.3.A_10	35.81355517	-104.9244342

Restoration Activities
Restoration activities are not a part of this watershed-based planning grant effort but the WCWP will inform land managers as to the best available effective management and restoration measures to improve flow conditions.

A.6 Quality Objectives and Criteria for Measurement Data

Question/Decision
The baseline data collection and monitoring components of the WCWP are intended to answer the following questions:
1) The surface flow, surface flow temperature and flow timing data gathered as part of the WCWP will be used to help inform the current flow regime of Wolf Creek and may inform whether Wolf Creek can support the designation of Marginal Coldwater Aquatic Life.
2) Type and location of Management and Restoration Measures that could improve subsurface recharge and surface flow conditions in the Wolf Creek watershed to address the current impairment due to Flow Regime Modification.

The monitoring data and historical flow information gathered to develop the WCWP will be used as SWAP-MODFLOW Model inputs as applicable to help answer the questions listed above. Model outputs will help inform both the potential Wolf Creek flow regime as well as Management and Restoration Measures to improve subsurface recharge and surface flows in the Wolf Creek Watershed.

Data Quality Objective (DQO)
The quality of the data will be adequate to provide a high level of confidence in determining effects of future changes in management and restoration on Wolf Creek in the WCWP. The quality of the data will be collected according to Standard Operating Procedures (See section B2) in order to provide a high level of confidence in the development of the WCWP.

Data Quality Indicators
The measurement quality objectives will be sufficient to achieve the DQO and will be in conformance with those listed in the SWQB's QAPP (NMED/SWQB 2018). The Data Quality Indicators listed in the SWQB's QAPP and applicable to the data collected for this project are precision, bias, accuracy, representativeness, comparability, completeness, and sensitivity.

Table 5. Data Quality Indicators

DQI	Determination Methodologies
Precision	Will be ensured by using the standardized procedures identified in this QAPP. Having two trained field team members present at all time while collecting data.
Bias	Is to reduce the systematic or persistent distortion of any measurement process, bias will be minimized by using professional and experienced staff to collect and analyze data.
Accuracy	The basis for determining accuracy will be staff's expertise of the survey method for collecting data and ensuring the accuracy of the equipment being used is within the required range of a survey.

Representative	Monitoring location will be chosen based on proximity of assumed probable sources and potential impact on water flow with emphasis on identifying potential sources of impairment.
Comparability	Monitoring locations will be monumented for repeat sampling events to compare pre- and post-treatment data. Methods listed under this QAPP for data collection are standardized and reproducible with the intent to be comparable to other studies.
Completeness	Surveys and methodologies will be completed in their entirety as identified in this QAPP and completed as needed for project record.
Sensitivity	Flow meters and other methods of monitoring for presence or absence of water measure the flow of Wolf Creek are being monitored at a scale that will be able to show a measurable difference. For example, flow results will be measured at a scale that the sensitivity will show even a small absolute amount of change that can be detected by an increase or decrease in that measurement. To augment this flow information metrics of simply presence or absence of water will help refine metric sensitivity.

A.7 Special Training/Certification

This project will be implemented by the HPWA, who will be trained by the SWQB Project Officer in accordance with procedures identified in SOPs referenced in this QAPP. Data collection and monitoring for this project will be implemented by HPWA with technical assistance and oversight from the SWQB Project Officer. No volunteers are identified at this time, but all volunteers will always be trained by either Amina Sena and/or Rich Pratt and supervised by HPWA staff in the field during data collection. Any individual conducting work for the project will review this QAPP and sign the acknowledgment statement prior to initiating any work. The signed acknowledgment statements will be kept on file with original QAPP by the QAO.

A.8 Documents and Records

The SWQB Project Officer will make copies of this approved QAPP and any subsequent revisions available to all individuals on the distribution list who do not have signature authority for approving the QAPP.

When changes affect the scope, implementation, or assessment of the outcome, this QAPP will be revised to keep project information current. The SWQB Project Officer, with the assistance of the QAO, will determine the effects of any changes to the scope, implementation, or assessment of the outcome on the technical and quality objectives of the project. This Project Plan will be reviewed annually by the SWQB Project Officer to determine the need for revision.

Project documents include this QAPP, field notebooks, calibration records, validation and verification records, recorded field data, records of analytical data in hard copy or in electronic form, and QC records. Also included are project interim and final reports. Data captured on a global positioning system (GPS), camera, smart phone, tablet, or laptop will be downloaded to the HPWA computer or an external hard drive at the end of each day. Copies will be made of all data and stored separately from the original data.

All digital project data will be kept in a project file on a HPWA computer and on a separate external backup hard drive at the HPWA office. Hard copy project documents will be kept in a project folder in a file cabinet at the HPWA office. All hard copy documents will be digitized and stored on a HPWA

computer and backup hard drive (see Table 6). Copies of the data will be distributed by HPWA to NMED SWQB Project Officer after each field season.

Table 6. Data Records for the Project

Document	Type of Form	Storage Location	Field Sheet Used
QAPP	Electronic (.doc) & Hard Copy	Hard drive and in file cabinet.	EPA Requirements for Quality Assurance Project Plan. EPA QA/R-5. Located at: https://www.epa.gov/sites/production/files/2016-06/documents/r5-final_0.pdf
Sonde Deployment Form	Hard Copy	Hard drive and in file cabinet.	Sonde Deployment form. Located at https://www.env.nm.gov/surface-water-quality/sop/
Sonde Data	Electronic (.xls)	Hard drive	NA
Flow Data	Electronic (.doc) & Hard Copy	Hard drive	https://www.env.nm.gov/wp-content/uploads/sites/25/2018/08/WQMP-CPP-Appendix-C-Hydrology-Protocl-May-2011.pdf (for season of flow) and https://www.env.nm.gov/wp-content/uploads/sites/25/2017/06/SOP_7.0_Discharge_4-7-15.pdf (for flow protocol)
HOBO® TidbiT Loggers Data	Electronic	Hard drive	NA
Shallow Well Data	Electronic	Hard drive	NA
Motion Sensitive Camera Data	Electronic	Hard drive	NA
Photos	Electronic (.jpg)	Hard drive	Permanent Phot Point Record. Appendix I *"Let the Water do the Work"*
Interim and Final Reports	Electronic (.doc) & Hard Copy	Hard drive	NA

GROUP B: DATA GENERATION AND ACQUISITION

Group A:
Group B:

B.1 Sampling Design

Amina Sena and Rich Pratt will be responsible for conducting all monitoring and all related data collection efforts. Multiple methods for examining the flow conditions and presence of water in Wolf Creek will be used to both test available methodologies and describe factors affecting stream flow.

To investigate potential sources for the Flow Regime Modification, monitoring of surface and subsurface water conditions will occur at strategic locations and employ a flexible monitoring plan that allows for adapting to changing weather patterns if needed. Sample reach selection was according to Level 1 Field Procedures Hydrology Protocol; for the Determination of uses Supported by Ephemeral, Intermittent,

and Perennial Waters prepared by the Surface Water Quality Bureau New Mexico Environment Department, May 2011.

Monitoring locations were designed to incorporate flow inputs from major tributaries and large watershed areas. Wheeler Lake and the large diversion structure, that reroutes the entire main tributary of Wolf Creek into Wheeler Lake, is a main focal point for monitoring activities. Monitoring locations were also located given changes in geologic substrate in the Wolf Creek stream bottom as well as on the ground expertise and knowledge on where the most reliable surface flows regularly occur. Monitoring locations all occur on the main channel of Wolf Creek, Assessment Unit NM-2305.3.A_10. A few select large tributaries may also have HOBO® MX TidbiT meters to detect timing of the presence or absence of flow, but all flow monitoring sites, shallow wells and motion sensor cameras are in the main channel.

According to the Hydrology Protocol (SWQB, 2011), timing of monitoring flows should occur typically between late May and mid-July (to avoid snowmelt) OR mid-September and early November (to avoid monsoons). The protocol also indicates to look to local gaged streams and verify that this is indeed the right season to capture low flows for the area of interest. The Mora River shows low flows as indicated in Table 7, which is a slightly different trend compared to the normal New Mexico low flow trends.

Table 7. Monthly Mean Flows in local gaged rivers

Monthly Mean Discharge in cubic feet per second (CFS)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
USGS 07218100 MORA R NR WATROUS	22	24	27	109	87	81	52	100	47	39	38	27
USGS 07216500 MORA RIVER NEAR GOLONDRINAS	11	10	12	38	83	68	37	51	31	20	13	11
USGS 07215500 MORA RIVER AT LA CUEVA	7.2	6.9	9.7	29	72	62	32	41	26	16	10	7.6

The Mora River gage info for monthly mean flows suggest that the low flow season is from Oct timeframe through March. The Mora headwaters are in a snow driven environment where stream flows are literally held up frozen in ice and stored in the snowpack. The Mora River is also heavily irrigated, and the timing of these diversions must be better understood before statements about seasons of low flow can be made.

For these reasons, locally gaged streams on the Mora River do not necessarily reflect the most representative stream flow data for Wolf Creek especially when it comes to timing the season of low flows. The headwaters of Wolf Creek are at a much lower elevations than the headwaters of the Mora River and Wolf Creek has a much smaller watershed overall. For these reasons, the monitoring for Wolf Creek will abide by the NMED Hydrology Protocol and not the low flow season as reflected in the Mora.

According to the Hydrology Protocol (SWQB, 2011), timing of monitoring flows should occur typically between late May and mid-July (to avoid snowmelt) OR mid-September and early November (to avoid

monsoons). Monitoring during drought and after recent rainfall activity is prohibited in this protocol, as to be able to better understand potential flow regimes under typical representative climate conditions. However, monitoring may occur throughout various seasons in 2022 so that the data may provid a better understating of hydrologic regime of the Wolf Creek Watershed.

HPWA will try to monitor all locations as described with all the equipment listed, but actual long-term monitoring locations may need updated based on initial data results and ground truthing Google Earth placed monitoring points. Long term monitoring locations will be actively visited based on available budget and time needed to complete site visits. Sites may be reduced based on budget limitations, site accessibility and logistics for rolling out monitoring equipment installation. Potentially less sites or a reduced site visit frequency may occur to improve efficiency of efforts and resources. New sites or new monitoring techniques will not be added without first completing all QAPP update requirements.

Weather is another reason monitoring commitments must be expected to be flexible. An attempt to monitor in the first week of July may be cancelled if the monsoons hit early. Or a typically dry fall period could have a record Hurricane season that sends unexpected moisture. Monitoring needs to occur in periods when there has been little to no rain for a duration of time. A flexible monitoring plan that allows for adapting to changing weather patterns is needed.

Table 8. Project Monitoring Specifics

Responsible Party	Monitoring	Location	Frequency
Contractor/ Cooperator	Type of Monitoring	Monitoring Station ID	Frequency interval
HPWA	Surface Flow Monitoring	A, B, C, D, I, L, N,O,Q, Y and Z.	Monthly during dry season May and mid-July OR mid-September and early November
HPWA	Sonde Deployment	A, B, C, D, I, L, N,O,Q, Y and Z.	Monthly during dry season May and mid-July OR mid-September and early November
HPWA	Motion Sensitive Cameras	A, B, C, D, E, G, I, M, V, W, and Z.	Storm Dependent (seasonal download)
HPWA	HOBO® MX TidbiT dataloggers	E, F, G, H, J, K, L, N, P, R, S, T, U, V, X, Y, and Z.	Storm Dependent (seasonal download)
HPWA	Shallow Well	A, B, C, D, E, F, L, N, O, Q, U, W, and Y.	Monthly during dry season May and mid-July OR mid-September and early November

B.2 Sampling Methods

Stream flow will be collected with either a Marsh-McBirney Flo-Mate 2000 Portable Flowmeters, Price Pygmy and AA meters from Rickly Scientific or a Hach Hydromet velocity flow meter. Stream flow will be collected in accordance with SWQB SOP 7.0, *Stream Flow Measurement, Revision 1.*

Sondes will be deployed at monitoring locations in accordance with the SWQB SOP 6.2 *Sonde Deployment* (NMED/SWQB 2018b). Deployment protocol will follow the Step-by-step Process section identified in SWQB SOP 6.2 *Sone Deployment* for Instantaneous Measurement (NMED/SWQB 2018b). The calibration and maintenance of sondes will be conducted according to SWQB SOP 6.1 *Sonde Calibration and Maintenance* (NMED/SWQB 2018a) before and after deployment, using the methodologies described in SWQB SOP 6.1.

Temperature and indirect soil moisture presence will be collected with a HOBO® MX TidbiT Water Temperature Data Logger with water detect technology. Dataloggers will be deployed and calibrated according to SWQB SOP 6.3 *Temperature Data Loggers (Thermographs)* (NMED/SWQB 2019).

Time-lapse Imagery assessed from motion sensitive cameras will be used to detect absence or presence of flows. The 1080P Waterproof IP56 HD Outdoor Hunting Camera 42 IR LEDs Infrared Night Vision Hunting Scouting Camera Wildlife Hunting Monitoring Camcorder will be used for time-lapse imagery. Time lapse monitoring will be set with an internal software with a temporal resolution of 15 minutes. Cameras will be mounted at trees or structures close to the channel. For improved image analysis a gauging plate will be installed in the channel. This method was closely related to a time-lapse camera gauging system published by Gilmore et al. (2013) described in https://www.sscafca.org/wp-content/uploads/2018/01/GSchoener_TimeLapse_AcceptedManuscript.pdf.

Shallow wells with pressure transducers will use the CS451/CS456 Submersible Pressure Transducer to record water level and temperature readings. Dataloggers will be set up according to the manual and manufactures directions described in https://s.campbellsci.com/documents/us/manuals/cs451-cs456.pdf. Shallow wells will be installed according to the Guidelines and Standard Procedures for Studies of Ground-Water Quality: Selection and installation of wells, and supporting documentation described in https://pubs.usgs.gov/wri/wri964233/pdf/wri964233.pdf

The watershed model known as SWAT MODFLOW will be used to evaluate the flow data collected as well as the surface and subsurface water presence data to make recommendations on the potential hydrologic regime of Wolf Creek and ultimately help in identifying Management and Restoration Measures to improve flow conditions. The monitoring data and historical flow information gathered by the WCWP will be used as SWAP-MODFLOW Model as inputs to refine and calibrate the model. The calibration of the model will be done in accordance to the SWAT MODFLOW Manual described in https://swatplus.gitbook.io/docs/download-docs.

Photographic documentation will be collected using the protocols identified in Let the Water Do the Work (Zeedyk, et al, 2009). Photographic documentation showing increased wetted perimeter on Wolf Creek and locating where wetland vegetation is currently and how it changes over time.

B.3 Sample Handling and Custody

Because there are no plans to collect samples for laboratory analysis, there are no handling requirements.

B.4 Analytical Methods

Because there are no plans to collect samples, no analytical methods are needed.

B.5 Quality Control

Quality control (QC) activities are technical activities performed on a routine basis to quantify the variability that is inherent to any environmental data measurement activity. The purpose for conducting QC activities is to understand and incorporate the effects the variability may have in the decision-making process. Additionally, the results obtained from the QC analysis, or data quality assessment, may identify areas where the variability can be reduced or eliminated in future data collection efforts, thereby improving the overall quality of the project being implemented.

Quality Control mechanisms are implemented as described under the Quality Objectives and Criteria for Measurement Data as well as the sampling methodologies identified under this QAPP. Additional Quality Control includes the professional expertise of the personnel working under this project.

B.6 Instrument/Equipment Testing, Inspection and Maintenance

The only equipment needing maintenance, testing and inspection are the sonde meter and flow meter. These meters will be tested during calibration for accuracy and function according to requirements and procedures specified in the SWQB SOPs noted in the Instrument/Equipment Calibration and Frequency section of this QAPP. The sonde meter will be visually inspected for damage before and after each use and if any maintenance is necessary, it will be completed prior to the next monitoring trip. The velocity meter will be tested, inspected, and maintained in the same manner. Motion detection cameras, HOBO® MX TidbiT dataloggers and shallow wells with pressure transducers should be able to be installed once with little to no maintenance and only the need to download data at regular intervals. If maintenance is required, it will be done so according to the manufacturer's protocols.

B.7 Instrument/Equipment Calibration and Frequency

It should be possible to show that all data was collected with monitoring devices that can be shown to have been properly calibrated. For this project, specific calibration requirements apply to the sondes and flow meters. The calibration of the sondes will be calibrated according to SOP 6.1 *Sonde Calibration and Maintenance* (NMED/SWQB 2018a) before and after deployment, using the methodologies described in SWQB SOP 6.1.

For this project, specific calibration requirements apply to velocity flow meters and they will be calibrated according to SWQB SOP 7.0 *Flow* (NMED/SWQB 2015). The calibration of flow velocity meters will be checked before each field day (before deployment and after retrieval) using the methodology described in SWQB SOP 7.0. Velocity meters to be used in this project will be either Marsh-McBirney Flo-Mate 2000 Portable Flowmeters, Price Pygmy and AA meters from Rickly Scientific or Hach Hydromet velocity flow meter.

A calibration record book will be maintained for each device throughout the life of the project. This data will also be maintained electronically in an MS Excel file spreadsheet. Documentation of calibration and verification will be maintained by Project Coordinator, Amina Sena or as backup Rich Pratt.

B.8 Inspection Inspection/Acceptance for Supplies and Consumables

There are no supplies or consumables that could affect the quality of data related to this project.

B.9 Non-direct Measurements

The primary source of non-direct measurements will come from the use of existing aerial and satellite photos of Wolf Creek to determine historic channel locations wetted conditions. The most common and anticipated source is the National Agriculture Imagery Program (NAIP) imagery from the US Department of Agriculture for New Mexico. The specifications for this imagery are documented on the internet at the following location: https://www.fsa.usda.gov/programs-and-services/aerial-photography/imagery-programs/naip-imagery/.

HPWA will utilize satellite imagery and LiDAR (Light Detection and Ranging) to locate wet and dry sections, arroyos draining alluvial fans, wetlands, and identify visible on-the-ground flow modifications. This Wet Dry Mapping will help guide the Monitoring Plan and will help inform monitoring locations.

HPWA will identify sources of flow modification using this monitoring approach. We will use this baseline data, assemble historical information and work together with NMED to develop attainable flow goals to use in tracking long-term progress toward restoring flow to this and other similar 4C streams in New Mexico. To aid in this effort the following resources will be used to help characterize Wolf Creek climate and surface flow conditions (as deemed appropriate in the Hydrology Protocol (SWQB, 2011):

- Google Earth
- SWQB Mapper with SWQB water quality stations and SWQB assessment units
- NHD streams
- USGS quadrangle maps
- Aerial photographs
- National Hydrography Dataset
- Digital Geologic Map of NM
- National Land Cover Dataset
- BLM Land Status
- USDA or NRCS soil survey
- Omernik Ecoregions
- NM Roads
- Historic or recent flow data (known sources include SWQB, USGS, or localized sources
- Standardized Precipitation Index:
- Rain gauge stations within the County as well as airport/regional climate data
- The National Weather Service

Multiple methods for examining the flow conditions of Wolf Creek will be used to both test available methodology and describe factors affecting flow. These non-direct measurements will not affect the quality of flow data related to this project.

B.10 Data Management

HPWA will be responsible for data management. All data will be converted to electronic format, stored, and backed up by HPWA. Computer hard drives are backed up at the end of every season or will be backed up on external hard drives, respectively. Original hardcopy project document data sheets will be kept by HPWA. Hard copies of field sheets will be maintained in a project binder organized by assessment and date and stored in a key protected filing cabinet in the office of HPWA. The HPWA

Project Coordinator will ensure original hardcopy project documents are scanned and then transferred to the SWQB Project Officer along with electronic data at the end of every field season. Upon receiving data, the SWQB Project will store data on SWQB network drive. The SWQB network drive is backed up daily and maintained by the NMED Office of Information Technology. Electronic data files will be stored on the SWQB network drive in accordance with 1.21.2 NMAC, *Retention and Disposition of Public Records.*

GROUP C: ASSESSMENT AND OVERSIGHT

Group C:

C.1 Assessment and Response Actions

The SWQB Project Officer will provide project oversight by periodically assisting with and/or reviewing data collection efforts. A review of the baseline data collection and monitoring efforts by the SWQB Project Officer will take place at the end of each monitoring season. The SWQB Project Officer will assess project progress to ensure the QAPP is being implemented, including periodic audits by the QAO, as needed. Any problems encountered during the course of this project will be immediately reported to the SWQB Project Officer who will consult with appropriate individuals to determine appropriate action. Should the corrective action impact the project or data quality, the SWQB Project Officer will alert the QAO. If it is discovered that monitoring methodologies must deviate from the approved QAPP, a revised QAPP must be approved before work can be continued. All problems and adjustments to the project plan will be documented in the project file and included in the final report.

C.2 Reports to Management

Annual reports will be submitted by the HPWA, to the SWQB Project Officer and will include progress of project and any available data. Printouts, status reports or special reports for SWQB or EPA will be prepared upon request. The WCWP will be submitted to the SWQB Project Officer by Dec. 31, 2022. The SWQB Project Officer will be responsible for submitting the final project deliverables to EPA through their Grants Reporting Tracking System.

GROUP D: DATA VALIDATION AND USABILITY

Group D:

D.1 Data Review, Verification and Validation

Data will be reviewed by the Field Team Supervisor for erroneous data, incomplete data and transcription errors prior to demobilization from the field site. Data will be considered usable if the requirements of this QAPP were followed and the data is within acceptable range limits as defined under this QAPP. Data that appears incomplete or questionable for the parameter will be flagged for review. Flagged data will be discussed with the SWQB Project Officer to determine the potential cause and usability. If a reasonable justification for use of the data cannot be attained, those data will be not used in analysis and implementation of activities listed under this QAPP unless the data can be recollected and assessed for usability.

D.2 Validation and Verification Methods

The HPWA will ensure that valid and representative data are acquired. In the event questionable data are found, the SWQB Project Officer will notified and will consult appropriate personnel to determine the validity of the data. Results of the verification and validation process will be included in the WCWP.

Verification and validation of flow data, sonde grab data, and long-term deployment of HOBO® MX TidbiT data loggers will be performed by the HPWA in accordance with applicable section (i.e., Verify Flow Data, Validation Sonde Grab Data, Long-term Deployment (LTD) Data) of the SWQB SOP 15.0 for *Data Verification and Validation* (NMED/SWQB 2020).

D.3 Reconciliation with User Requirements

The user requirement is a restatement of the data quality objective: The quality of the data will be adequate to provide a high level of confidence in the development of the WBP for the Wolf Creek Watershed. The quality of the data will be adequate to provide a high level of confidence in determining whether the Mora Watershed Based Plan Wolf Creek Update, Grant No. 667-429-1B is meeting the project goals, as stated in the approved scope of work.

If the project's results do not meet this requirement, then additional monitoring may be necessary to fill in data, which may include an extension of the monitoring period to measure effects that were not apparent during the project period.

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Acknowledgement Statement

New Mexico Environment Department Surface Water Quality Bureau

Mora Watershed Based Plan Wolf Creek Update
Clean Water Act Section 319 Grant No. 667-429-1B
Quality Assurance Project Plan Acknowledgement Statement

This is to acknowledge that I have received a copy (in hard copy or electronic format) of the North Ponil Restoration Project *Quality Assurance Project Plan*.

As indicated by my signature below, I understand and acknowledge that it is my responsibility to read, understand, become familiar with and comply with the information provided in the document to the best of my ability.

_____
Signature

_____
Name (Please Print)

_____
Date

Return to SWQB Project Officer, Wendy Pierard